Remarks

The Applicant thanks the Examiner for the telephone interview of April 19, 2005.

1) Rejection Under 35 USC 112 – Claim 5 and Claim 6 - AAR Plate C and AAR Plate F

As discussed by telephone, the Applicant respectfully submits that the AAR Plate sizes are widely known and relied upon as reference standards in the North American rail road industry. Even if the AAR Plate C or Plate F profiles were to change from time to time, the meaning of a patent claim is to be interpreted according to the state of the art or tests, standards or measurements established in the art as of the claim date: *Quantum Corporation v. Rodime PLC,* 851 F. Supp. 1382 (*"the meaning which the inventor gives to his words can not be made to depend upon subsequent events, but should appear when the application is filed"*). Consequently, the applicant submits that the use of the AAR Plate sizes is does not provide grounds for rejection under 35 USC 112 with respect to claim 5 or claim 6.

2) US Patent 6,470,808 of Clark

All of the rejections in the Office Action, whether under 35 USC 102 or 35 USC 103 rely on US Patent 6,470,808 of Clark as either the only or the principal reference.

3) Summary of Applicant's Argument

(i) The issue is whether Clark (or any other reference) provides an enabling description of a dropped deck center beam car having a 30 inch or greater step height.

(ii) The two main references in the case, Clark and Dominguez, both indicate a desire to increase the volume (i.e., the "cube") of lading that can be carried on a center beam car by depressing the central portion of the deck. Both Dominguez and Clark, show a concern about high center of gravity, with the clear inference that it is desirable to have a low center of gravity, and not desirable to raise the center of gravity.

(iii) The Applicant submits that (a) nothing in Clark or Dominguez shows how it would be possible to obtain a 30 inch step height merely by depressing the central portion of Clark's deck or Dominguez' deck, without extending well outside the AAR underframe clearance envelope;

and (b) to obtain a 30 inch step height without exceeding clearance, it appears that Clark (and Dominguez) would have to raise the height of the end deck portions of the car.

(iv) Raising the end deck portions of the car (a) is not shown, described or suggested by either Clark or Dominguez, hence there is no enabling description of the feature; and (b) necessarily raises the center of gravity of the car, and may decrease the volumetric capacity of the car, both contrary to the objectives of Clark and Dominguez.

(v) Since there is no enabling description of the feature, there cannot be grounds for rejection under 35 USC 102.

(vi) In as much as the 30 inch (or greater) step height is not shown, and the references teach against making the modification necessary to achieve that step height, there can be no grounds for rejection under 35 USC 103.

(vii) Therefore, neither Clark nor Dominguez, nor both taken together, show or describe all of the features of the various claims in a manner sufficient to establish a rejection under either 35 USC 102 or 35 USC 103, as the case may be.

The lengthy discussion presented below, which is a shortened version of the argument previously presented, provides the detailed underpinning of the argument thus summarized.

4) Commentary on Clark

(a) Introduction

The Office Action alleges that Clark et al., describes a deck structure that is "stepped upwardly relative to said medial portion by a distance of at least 30 inches, as described in lines 55 – 61 of column 4." The Applicant respectfully disagrees.

Clark says (at col. 4, lines 55 – 61):

"The center section may be *depressed* by any desired dimension, *subject to clearance limitations and other practical constraints.* In some embodiments, the center section 40 is *depressed* 16 in. to accommodate bundles of engineered wood products having a height of 15 ½ in. In other embodiments a 19 in. *depression* may be employed. In still other embodiments, the depth of the *depression* is 30 in." (Emphasis added).

As may be noted, while Clark says that the "*depression*" is 30 inches in "still other embodiments", the Applicant respectfully submits that Clark doesn't actually show, describe, or explain how any such "other embodiments" would be built. Clark is a bit coy on this, or perhaps did not fully think through whether such a car could be built according to the disclosure provided. Interestingly, Clark does state that any "desired dimension" may be used, "*subject to clearance limitations*". (Emphasis added).

This is not a trivial qualification.

(b) A Desideratum is not an Anticipation

The applicant notes that under both 35 USC 102 and 35 USC 103, the art upon which the rejection relies must be enabling, such that a person skilled in the art would be possessed of the invention, either because he or she is given an enabling description of the invention in its entirety in a single reference, under 35 USC 102; or because, if a reference is modified, or if two references are combined, under 35 USC 103, then the person of ordinary skill in the art would be possessed of the invention sufficiently well to practice it. Without an enabling disclosure, an invention is neither patentable nor is the "disclosure", such as it may be, an anticipation should a subsequent inventor succeed in describing a device that may permit a person skilled in the art to practice the invention. Where Clark suggests "still other embodiments," the Applicant respectfully submits that Clark is, at best, doing nothing more than giving a desideratum for which Clark has not provided an enabling disclosure.

(c) Clark – Objects and Desires

The Commissioner may wish to consider some of Clark's other comments:

(i) In the Clark Abstract:

"A center beam railcar that has *increased volume* capacity and versatility..." (Emphasis added).

(ii) Clark, col. 1, lines 17 – 23:

"First, the usable volume capacity of the center beam car is often reached before the car's weight capacity is reached. This results in inefficiency, in that weight carrying capacity of the car is not fully utilized. *One of the objects of the invention* is to provide a center beam car

having capacity to carry loads of *increased volume*." (Emphasis added).

(iii) Clark, col. 1, lines 51 – 53:

"The invention provides a center beam railcar that addresses the above concerns without unduly increasing the weight or expense of manufacturing the car. The railcar of the inventor preferably provides *increased volume* capacity ..." (Emphasis added).

(iv) Clark, col. 2, lines 12 – 14:

"To further *increase the volume* of lading that can be carried, the railcar preferably has a depressed central portion." (Emphasis added).

(v) Clark, col. 4, lines 41 – 42:

"To *increase the volume* of lading that can be accommodated ..." (Emphasis added).

(vi) Clark, col. 4, lines 62 – 67:

"Where products of varying densities are to be shipped, *to facilitate maintaining a sufficiently low center of gravity* for the car when fully loaded, products of higher density such as LVL may be loaded in the depression, with products of relatively lower density such as engineered wood products being loaded thereabove." (Emphasis added).

5) US P 4,951,575 - Dominguez' Commentary

Dominguez stated that he sought a car that had increased volumetric capacity and a reduced center of gravity height. Dominguez says:

(i) Dominguez Col. 1, lines 64 – col. 2, line 2:

"Further, the high center of gravity of the loaded car in the prior art produces relatively poor track worthiness and ride stability. Therefore it is desirable to provide center beam/center partition cars that not only provide greater efficiency, but also demonstrate greater stability during loading/unloading and when being transported."

(ii) Dominguez Col. 2, lines 5 – 8:

"It is therefore an objective of the present invention to provide an improved center beam flat car of depressed center design demonstrating enhanced operating efficiency and greater stability in use."

(iii) Dominguez Col. 2, lines 21 – 27:

"The depressed loading area of the depressed center beam car herein disclosed also significantly increases the available volumetric capacity for loading modules and also substantially lowers the center of gravity of empty and fully loaded cars. The car of the invention is designed within the AAR Plate C clearance diagram."

(iv) Dominguez Col. 2, lines 36 – 49 (abridged):

"The depressed section for carrying loads thus results in additional carrying capacity ... It is also estimated that the incorporation of the depressed floor section of the invention will decrease the loaded car center of gravity in the range of ten to fourteen inches. The reduced center of gravity decreases the probability of the car tipping over during the loading / unloading cycles and significantly improves the track worthiness and ride stability of the car."

6) Conclusions based on Clark and Dominguez

Thus we can conclude that, whether from Clark et al., or from Dominguez et al., a person skilled in the art would understand:

(a) that it is desirable to increase the volumetric lading capacity of the car; and
(b) that it is not desirable to raise the center of gravity.

The Applicant therefore submits that a person of ordinary skill in the art would seek to achieve (a), and would also seek to avoid (b).

The Applicant notes that the Office Action itself contains a similar assumption: "Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the design choices as described above (i.e., in the Office Action) in combination with the center beam railroad car as disclosed by Clark et al., *for the purpose of providing a center beam railroad car that is capable of carrying greater sized loads*." (Emphasis added).

7) Clark and Dominguez teach against the rejections.

I) Preliminary Comments

For completeness in setting forth the underlying assumptions, it may be noted that the Plate F clearance diagram is the same as the Plate C clearance diagram except that Plate F allows

greater vertical height. In terms of the underframe clearance envelope, they are identical. Thus, all other things being equal, a car loaded to the plate F height limit would tend to have a higher center of gravity as laden than an identical car loaded only to the Plate C limit.

Both Clark and Dominguez desired to increase the volumetric capacity of the car, and both were concerned about the center of gravity. It is reasonable to assume that if they had been capable of obtaining a lower center of gravity, they would have done so.

II) How is the Step Height Determined?

The step height δ is determined by subtracting the height of the lower deck (H_{Low}) from the height of the upper deck (H_{Upper}), both heights being measured relative to the common datum of Top of Rail. Arithmetically, $\delta = H_{Upper} - H_{Low}$.

It is mathematically inescapable that to increase δ, one must either (a) lower the lower deck; (b) raise the upper deck; or (c) both (a) and (b). If the lower deck cannot go any lower, then it is equally inescapable that to increase step height, the end deck portion must be raised.

III) How big is the step shown and described by Clark ?

Dominguez tells us that the mid-portion of his deck is 14 – 18 inches lower than the end portions (col. 4, line 35). Clark says in three places that the depth is 16 inches to accommodate a 15½" height bundle (Abstract, Col. 2, lines 24-28, Col 4, lines 57-59). This is credible, in view of Dominguez' similar statement. In one place (Col. 4, lines 59-60) Clark suggests a 19" depression. This is not necessarily improbable given that Dominguez' range of 14-18 inches is comparable. Further, in general proportion, Clark's illustrations indicate that Clark's step height is broadly comparable to Dominguez' step height.

IV) Could Dominguez' mid-portion or Clark's mid-portion have been lower?

To obtain the step height of at least 30 inches, without raising the end deck portions of the car would mean that Dominguez or Clark would have had to drop the center portion of the deck at least 12 inches more than the 18 inches Dominguez indicates. A depression of this magnitude would be substantially greater than the step height that appears to be shown in Clark's illustrations, and which appears to be generally consistent with Dominguez' step height.

Given Dominguez' stated objectives and Clark's commentary, the only reasonable inference is that if either Dominguez or Clark could have made the deck lower to reduce the height of the C of G or to increase lading capacity, they would have. Therefore, the applicant submits that a person skilled in the art, reading either Dominguez or Clark, would reasonably infer that the central portions of their decks were about as low as they could get them.

Put conversely, why would either Dominguez or Clark have left the center of gravity any higher than it needed to be? To do so would have been contrary to Dominguez' stated desires, and apparently contrary to Clark's commentary.

V) Does Clark Show or Describe a 30" *Depression*?

Clark refers to a "depression" of 30 inches. Reading Clark's disclosure as a whole, is this a credible assertion ?

The difference in step height between claim 1, for example, and the step height indicated in Dominguez is not a relatively minor amount. For a 30" step height, the difference over Dominguez (12+" - 16+") is almost as large again as the step height actually described by Dominguez (14" – 18"). This is not a trivial amount.

Both Dominguez' and Clark's end decks have heights that roughly correspond to the top of the coupler pocket (see Figure 1 of Dominguez and Figure 1 or Figure 9 of Clark). In an unladen car with new wheels this might yield a deck height of about 41" – 42". The car body must be at least 2-3/4" clear of TOR. Spring deflection would be about 2" to 2-3/8" (+/-) from the light car (empty) condition to the fully loaded condition. With 50 % reserve travel, based on a static deflection of the springs for a 63,000 lb car of ½" - 5/8" (+/-), this yields about 3 1/4" for spring travel. Subtracting, 42 – 33 5/8 – 2 3/4 – 3 1/4 = about 2½". This is the height remaining for the depth of the deck, side sills, and cross-bearers, *before* allowance for (a) sweep on curves, (b) the narrowing of the underframe clearance envelope; and (c) structural deflection under load.

It may be helpful to consider Clark Figure 2, or Clark Figure 6. In these illustrations, in which much of the height of the upper section of the center beam is omitted, the Plate F clearance template is shown as 60.

Clark Figures 1, 5 and 9 appear to show a conventional draft sill, running pretty much flush with the end deck portions, just clearing the trucks. Given that the maximum coupler

height centerline is 34 ½ inches, by rule; that the notch in the AAR underframe envelope is 1' – 3" above Top of Rail; that the first inward bend in the underframe profile is at 3' – 4"; and given that Clark's cross-bearers cannot have a negative vertical height, it is fairly easy to understand that the cars illustrated by Clark have depressions of well less than 30 inches.

From Clark's depiction of the clearance envelope, it appears that Clark may be illustrating a 15" or 16" depression in Figures 2 and 6. Nonetheless, in the depressed deck portion, Clark's cross-bearers, side sills, and deck are already at, or very close to, the AAR underframe envelope. Even supposing that the depression illustrated is 19", rather than the 15" or 16" that appears to be illustrated, how, and where, is Clark going to find the vertical clearance to push the deck down a further 11 inches to obtain a 30" (let alone 33 $^{5}/_{8}$") *depression* (a) without losing so much deck width that the 48 – 51 inch bundle width requirement is not met; and (b) without the cross-bearers extending grossly outside the AAR underframe envelope ? Clark does not say. This is not a trivial engineering problem.

The Applicant respectfully submits that to obtain a 30" step (let alone a 33 $^{5}/_{8}$" step) it appears that it would be necessary to raise the end deck portions, and by quite a fair bit. Squeezing dimensions by an inch or two is not going to be enough. If such a raised end deck feature were shown, it would be clearly noticeable in the illustrations of Clark or Dominguez. Yet Clark speaks only of a "*depression*". There is no indication anywhere in Clark of anything suggesting the raising of the end deck height beyond a height generally comparable to that which might customarily be expected.

Therefore, with respect to the rejections under 35 USC 102 based on Clark alone, the Applicant respectfully submits that Clark does not actually show or describe a railroad car having a 30 inch *depression*, let alone a step of more than 30 inches. The Applicant respectfully submits that the Clark reference therefore does not satisfy the test for anticipation, and does not provide a sufficient basis to found a rejection under 35 USC 102.

VI) <u>35 USC 103 – Suggestion, motivation or incentive: Raising the end deck portions</u>

Given that Clark does not show or describe a 30 inch "depression", is there anything in either Clark or Dominguez that shows, describes or suggests, raising the end deck portions to achieve a 30 inch step height? The Applicant respectfully submits that the answer to this question can be found by considering whether raising the end deck portions would conform to the objectives of Clark and Dominguez, quoted above. In that regard, the Applicant has provided

a sketch for the Examiner's convenience, labeled "Explanatory Sketch No. 1".

(i) Concerning Center of Gravity

Consider two possibilities: either (a) the same lading is carried on the first end deck portion as on the second end deck portion; or (b) both end deck portions are jammed full. Note that, in both cases, the height of the middle portion of the deck is the same, H_{LOW}, measured from the reference datum of Top of Rail. The heights of the upper decks are identified as H_{UPPER1}, or H_{UPPER2}, for a first car with an end deck at the usual height, and for a second car with a raised end deck. The step heights are defined as follows:

$\delta_1 = H_{UPPER1} - H_{LOW}$ and $\delta_2 = H_{UPPER2,} - H_{LOW}$

If the end deck step height is increased, from δ_1 on the right hand side of the sketch, to δ_2 on the left hand side of the sketch, it can be seen that the remaining available lading height shrinks from $H_{available1}$ to $H_{available2}$.

(a) First possibility: same load on each deck

Sketch No. 1 shows two identical rectangles in phantom lines, each having a depth 'D' and a width 'W'. It is clear from the illustration that the center of gravity C_2 of the rectangle on the left hand side is higher than the center of gravity C_1 on the right hand side, by the amount of the difference in step heights, $\delta_2 - \delta_1$. Therefore, even assuming that the rest of the car is laded exactly as before, (i) the center of gravity of the second rectangle must be higher than the center of gravity of the second rectangle, and therefore (ii) the overall center of gravity of the lading on the entire car is now higher than it was by some increment. Note that this will be true, whatever dimensions are chosen for 'D' and 'W' within the available lading envelope.

(b) Second possibility: both decks jammed full to capacity

Now suppose that both the right hand and left hand decks are jammed full over their entire available loading heights, $H_{available1}$ and $H_{available2}$, respectively. In this case, the center of gravity of the load on the left hand end deck is O_2, and the center of gravity of the load on the right hand end deck is O_1. O_2 lies at a greater height than O_1. The arithmetic difference in height is equal to one half of the difference between δ_2 and δ_1.

The Examiner may note that the end deck portion now carries less lading. But the overall C of G of the entire load will have risen incrementally because lading is, in effect, being removed from a location low down on the car, well below the overall C of G. Thus, the remaining C of G must be higher than before, by some incremental amount.

Conclusion re: Center of Gravity

Thus, we can conclude that raising the end deck portions raises the loaded center of gravity of the car. Whatever else Dominguez may have taught, he did not encourage raising the center of gravity of the laden car. Quite the contrary. The same can be fairly said of Clark.

(ii) Payload Efficiency/Volumetric Capacity

If the end deck is raised, the best that can be achieved is for the payload efficiency to stay the same. However, it may get worse. Consider three situations:

(a) Suppose raising the end deck raises Center of Gravity past the 98" limit

If the end deck is raised far enough, the overall center of gravity for the laden car may exceed the 98" limit relative to Top of Rail. In that case, lading must be removed from the upper region of the car until the C of G is again below 98". But, if lading is removed, the payload efficiency must decrease, contrary to Dominguez' desire and objective, and contrary to the thrust of Clark, who wants to increase lading, not decrease it.

(b) Suppose end deck raises the top of the load past the lading height limit

If raising the end deck raises the lading height past the lading height limit, then, again, lading must be removed from the top of the load until it no longer exceeds the lading height limit. As above, if lading is removed, the payload efficiency must decrease, contrary to Dominguez' stated desires and objectives.

(c) Suppose raising end deck neither raises C of G Past 98" limit, nor raises lading past lading height limit

In this case, the payload efficiency will remain as before. However, for a low density material that does not approach the GRL, or the C of G limit, raising the end deck portion will, necessarily, decrease the volumetric capacity of the lading envelope as measured between the level of the deck and the lading height limit.

Conclusion re: Payload Efficiency/Volumetric Capacity

The best that can be achieved is for the payload efficiency to stay the same as before. Even then, the volumetric capacity of the car, as measured by the volume of the lading envelope lying between the deck and the lading height limit, will decrease. Raising the end deck will, for the same amount of lading, raise the C of G of the laden car. Further, raising the end deck portions may also decrease the payload efficiency or potential volumetric capacity of the car.

Conclusion: Dominguez and Clark teach against raising the end portions of the deck

It follows from the foregoing, that raising the end portions of the deck would appear to work against the goals and objectives of both Dominguez and Clark, at least to the extent that it raises the C of G, or decreases the lading efficiency or the volumetric capacity.

Summary Concerning Center of Gravity and Volumetric Capacity

(a) Claim 1 recites a step height that is at least 30 inches.

(b) To obtain a step height of 30 inches, it appears inescapable that Dominguez and Clark would have had to raise their end deck portions significantly.

(c) All other variables remaining constant, raising the end deck portions appears to necessitate a rise in the height of the center of gravity, and a possible reduction in either the payload efficiency or the volumetric capacity of the car, or both.

(d) Dominguez tells us he wants to lower the center of gravity, not to raise it. There is nothing that suggests Clark thought that raising the center of gravity was desirable, either.

(e) Both Dominguez and Clark want to increase lading capacity, not decrease it.

The applicant submits that the only reasonable conclusion that can be drawn is that both Dominguez and Clark teach away from the presently claimed invention. Teaching away is the antithesis of suggesting that the person of ordinary skill go in the claimed direction. See *In re Dow Chemical* 837 F.2d 469, 5 USPQ 1529 (Fed. Cir. 1988); *In re Fine* 837 F. 2d 1071, 5 USPQ 2d, 1596 (Fed. Cir. 1988).

"Design Choice"

If Dominguez and Clark teach away from increasing the step height, the applicant

submits that it is irrelevant whether it is alleged that a choice between 30", 33-$^{5}/_{8}$", or some other large value designated as the claimed step height is alleged to be a "design choice", because Dominguez teaches against all of them. Dominguez teaches not to raise the center of gravity of the car because that degrades track worthiness and ride stability.

To put it another way, we never arrive at the point where a discussion of "design choice" is relevant: whether it would otherwise be a "design choice" or not, Dominguez teaches against doing it. It appears that much the same can be said of Clark.

Specific Features Not Shown, Described Or Suggested in References

The Applicant has noted that nothing in either Clark or Dominguez shows, describes or suggests that the end deck portions be carried at an abnormally great height. On the contrary, to the extent that such a feature might tend either to raise the center of gravity or reduce the volumetric capacity of the car, both references teach against it. Therefore, the Applicant respectfully submits that neither Clark, nor Dominguez, nor both taken together, show, describe, or suggest any of the features of such claims as may include end deck heights of between 52 ½ and 54 ½ inches above TOR, end deck heights in the range of 18 1/2 to 20 ½ inches above the coupler centerline height, end deck heights in the range of 10 ½ to 12 ½ inches above the draft pocket cap plate height, or the ratios of heights related to the raising of the end decks. The Applicant respectfully submits that no *prima facie* grounds for rejection have been established against any of these claims. The Applicant respectfully requests allowance of all such claims.

8) Summary

In summary, with respect to the substantive art rejections under 35 USC 102 and 103:

(a) With regard to the rejections made under 35 USC 102 given Clark, the Applicant respectfully submits that Clark does not provide a credible enabling description, whether by text or illustration, of a 30 inch step height. Clark does not, therefore, meet the test for anticipation under 35 USC 102.

(b) With regard to the rejections made under 35 USC 103 whether given Clark alone, or given Clark in light of Dominguez, the Applicant respectfully submits (i) that neither reference provides a credible enabling disclosure, whether by text or illustration, of a 30 inch step height; and (ii) notwithstanding that Clark may make a vague mention of a 30 inch

depression, it appears that a 30 inch, or greater, step height requires an abnormal raising of the end deck portions of the car, yielding an increase in the height of the center of gravity and a decrease in the volumetric capacity of the car, both results being contrary to the substantive teachings of both Dominguez and Clark, such that the references teach away from the grounds of rejection proposed in the office action.

(c) With regard to the suggestion that the selection of a step height is a matter of "mere design choice" the Applicant respectfully submits that (i) the issue of design choice does not arise where, as here, the references teach substantively against the proposed modification; and, in any case, (ii) the proposed modification that is said to be a mere "design choice" has substantial structural consequences that fall well outside the mere arbitrary adjustment of dimensions that might otherwise be dismissed as a "design choice".

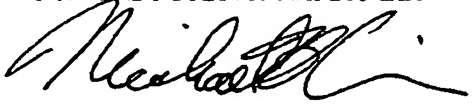
(d) With regard to claims having features related to end deck portions that have been raised abnormally, the Applicant respectfully submits that none of the objective evidence of record shows, describes, or suggests such features, and consequently grounds for rejection of those claims have not been established.

9) Conclusion

Applicant respectfully requests reconsideration of the rejections and allowance of the claims.

Respectfully submitted,

HAHN LOESER & PARKS LLP



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